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THE PRESENT STATUS OF DUTCH ELM DISEASE CONTROL ACTIVITIES IN THE UNITED STATES

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Dutch elm disease control activities, as now organized, are an outgrowth of investigational work initiated in 1930, following discovery of the disease in Ohio during the summer of that year. In 1930, three diseased elm trees at Cleveland, and one tree in Cincinnati were confirmed as infected with Graphium ulmi. To supplement investigations conducted by the Ohio station, the Federal government made available on July 1, 1932 a nominal appropriation of $3,000 for work during the 1933 fiscal year. These investigations largely were confined to the State of Ohio until discovery in June 1933 of an extensive zone of infection in an area which subsequently has been determined as including territory roughly within a radius of 40 miles from New York harbor. Including the infected trees discovered in 1930, 18 elms attacked by the Dutch elm disease have been found outside the main area of infection. Further finds in Cleveland include 4 diseased trees in 1931, 1 in 1933, and 2 in 1934. One infected tree was found in Baltimore, Md. in 1933. New isolated finds in 1934 comprise 1 diseased tree in Old Lyme, Conn., 4 infected trees in Indianapolis, Ind. and 1 confirmed tree in Norfolk, Va.

Definite information concerning the means by which the disease gained entry into this country was not available until July 1933. At that time a plant quarantine inspector at Baltimore observed elm burl logs from Europe which were determined as infected with Graphium ulmi. Infected logs also containing two species of the carrier elm-bark beetles were later intercepted at New York,

Norfolk and New Orleans. Effective October 23, 1933, Notice of Quarantine No. 70 was issued restricting the entry into the United States of all parts of the elm. Since the restrictions requiring freedom from bark and immediate heat treatment of logs imported for veneer purposes may not entirely safeguard the country from further importations of the disease, an embargo against the entry of such logs has been recommended.

Although supervision of the disease control work has been somewhat permanent since the work began, personnel at the disposal of Federal and State agencies for location and eradication of confirmed specimens has been from a variety of sources. In the absence of regularly appropriated funds with which to eradicate the disease in the heavily infected sections composing the tri-State area adjacent to New York City, funds and labor were sought from the several emergency units of both State and Federal governments. Originally, scouting and eradication were carried on as a project under a tentative allotment of approximately $400,000 from emergency funds. PWA funds were employed from August 21, 1933 to December 15, 1933. The work then continued under an allotment of CWA funds until May 31, 1934. Upon conclusion of CWA activities, the control project was taken over as a unit of the work Division of the FERA. In addition, some 20,000 man hours of labor were contributed between November 1, 1933 and February 15, 1934 by men of the CCC working under the supervision of NRA foremen. Not until the beginning of the present fiscal year were regularly appropriated funds available with which to engage in systematic scouting to the apparent boundaries of the zone of infection for the purpose of definitely locating the diseased trees.

For the fiscal year beginning July 1, 1934 there was included in the Department of Agriculture Appropriation Bill the sum of $150,000 for Dutch elm disease control. This sum is reducible by the amount of any emergency funds allotted to

the control work. State funds for cooperative control work were also available on approximately the same date in New York and New Jersey. The State of New York appropriated $172,500, and the State of New Jersey $30,000.

Under cooperative agreements between the Bureau of Entomology and Plant Quarantine and the infected States, each organization is assigned certain definite phases of the work. Scouting for the purpose of locating diseased trees, and the laboratory culture of collected specimens to confirm presence or absence of infection are designated as Federal activities. Information concerning confirmed specimens is turned over to the State control organization. State officials then make the necessary contacts to secure permission for eradication of the diseased trees, and finally arrange for felling and burning of these trees. In New Jersey and New York, tree removal and destruction largely have been performed under contracts let by the State control projects to commercial tree firms, municipal shade tree commissions, or other experienced organizations equipped to satisfactorily remove from residential areas large trees frequently requiring topping and sectional removal with ropes to avoid damage to wires and nearby buildings. A number of eradication crews were also employed on State funds. These arrangements worked satisfactorily until depleted funds interrupted the work. Employment during July and August of this year of large numbers of scouts to survey the rapidly expanding area soon depleted Federal funds, forcing a reduction in personnel on August 31. In New Jersey contracts for diseased tree eradication rapidly exhausted the $30,000 State appropriation, and the removal of diseased trees in New Jersey was halted on September 15. Federal field personnel was reduced to a minimum when defoliation of elms in the fall made it impracticable to do further scouting for evidence of disease symptoms.

Considered at various stages of progress the record of survey and eradication accomplishments show that at the end of 1933, 571 Graphium trees had been

infection caused considerable enlargement of the work area. This expansion of territory, together with forced reduction of the scouting personnel, permitted only partial completion of the second and third go-overs in the entire area. On November 30, the total infected zone in the three States included 2,464 square miles. The additional 10-mile strip of protective zone includes 2,169 square miles. Of this total work area, 67 percent is in New Jersey, 17 percent in New York, and 16 percent in Connecticut.

Collected twig samples are delivered daily to the laboratory of the Division of Forest Pathology of the Bureau of Plant Industry at Morristown, N. J. Here the specimens are cultured and positive or negative reports rendered. In New Jersey and New York during the past summer positive reports were then turned over to State officials for prompt eradication of the infected trees. Police powers granted under State Plant Pest Acts are authority for such disease eradication. Practically without exception, property owners concerned have voluntarily granted permission for removal of their infected trees after certain educational preliminaries have brought to their attention the seriousness of the disease. Since State funds were not available for tr e removal in Connecticut, the majority of the 57 infected trees found in that State were removed and destroyed by the municipalities concerned.

The most favorable period for determining infected trees is from about May 15 to early in July. As the elms develop their leaves, the wilting characteristic of fungous infection is particularly apparent even at some distance. At this early period, experienced scouts are able to determine with about 90 percent accuracy the trees exhibiting Graphium infection, despite the fact that the symptoms closely resemble those shown by trees infected with Cephalosporium or Verticillium. As the fungus progressively attacks the tree, further symptoms of

the disease appear in the form of browning or yellowing of the foliage, partial defoliation, and, throughout the entire course of the disease, the characteristic discoloration and streaking of the sapwood.

At the present time, the most serious aspect of the situation in the known infested zone is the presence of a large number of standing confirmed trees in New Jersey, and the existence in the tri-State area of approximately 45,000 dead and more than half dead elms. Scouts now engaged in elm tree census have tagged 4,667 dead and dying elms in New Jersey, 14,193 in New York and 3,330 in Connecticut. A small percentage of these upon culturing are showing Graphium infection. All dead and dying elms are potential breeding places for the bark beetles now indicated as the principal vectors of the disease.

Effective cooperation to the extent possible by appropriated funds has been extended by the three infected States. Gratifying responses to the Department's request for cooperation in speeding the eradication program also have been received from the general public, municipalities concerned, and various local organizations interested in civic welfare.

A comprehensive program for next year's scouting activities must also include observations for infected trees in widespread sections of the United States to which have been shipped elm burl logs for veneer manufacturing. Most of the infection centers now known are in the vicinity of veneer factories known to have received elm burl logs of European origin or near ports at which infected logs may have been imported. Continued intensive scouting must also be performed in the present work area and contiguous sections for the purpose of discovering and eradicating elms infected during the past summer, whose diseased condition will not be apparent until foliage develops next spring.

Until discovery in June 1933 of the disease in the environs of New York City, the known infections appeared to be localized cases which yielded to prompt eradication. When the intensity of the disease was determined in the tri-State area, the Department immediately brought to public attention the scope and seriousness of the situation. At a public hearing held in Washington on September 15, 1933, the history of the disease in this country was discussed in considerable detail. Through the regular informational channels of the Department, publicity has been given to the situation as developments warranted. Necessarily, the control program has been limited by the sums available for the work. Research observations point to the incidence of the disease in this country at least as early as 1929. Despite the five years in which infection has spread, rapid strides have been made in the past seven months in discovering and eradicating elms now diseased. If we are able to complete the pro ram outlined for this winter, a major source of disease spread will be eliminated. A sustained program involving adequate scouting and eradication over a period of years to ferret out any remnants of the disease will, we believe, result in its ultimate eradication.

With the funds now available, or to be in a few days, we intend to eradicate and remove the dying elms in this area provided no uncommon handicaps are encountered.

Any one interested in the distribution of the disease can, by coming up here to the platform, find out the numbers of infections.